

# Science Lesson Planning Template

## Context Issues of the Lesson

<b>Lesson Title:</b>	Measuring temperature: Making predictions about the Sun's Energy – Warming the Earth each day.
<b>Grade Level</b>	First
<b>Topic/Theme/Nature of the Investigation:</b>	Predictable Patterns of the Earth and Sun
<b>NGSS Performance Expectation(s)</b>	1-ESS1-2: Make observations at different time of year to relate the amount of daylight to the time of year. <b>1.MD.C.4</b> - Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
<b>NGSS Dimension 1 component</b>	ESS1.B: Earth and the Solar System: Seasonal patterns of sunrise and sunset can be observed, described, and predicted. <b>W.1.8</b> - With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
<b>NGSS Dimension 2 component</b>	1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted
<b>NGSS Dimension 3 component</b>	ESS1.A: The Universe and Its Stars Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
<b>Duration:</b>	5 Lessons @ 30 minutes

## Planning Stages Within the 5-E Inquiry Model

<b>Engage</b>	
<p><b>PURPOSE:</b></p> <ul style="list-style-type: none"> <li>• SWBAT identify what a thermometer is and how it is used</li> <li>• SWBAT will make predictions about temperatures of different substances</li> <li>• SWBAT will make predictions as to what will happen to the thermometer when submerged in substances</li> <li>• SWBAT will connect predictions to Earth's temperatures during daytime versus nighttime.</li> </ul>	
<p><b>What is the teacher doing? What are the students doing?</b></p> <ol style="list-style-type: none"> <li>1. Teacher is assisting students in looking at temperatures and recording observations/predictions. Students verbalizing observations/predictions and recording data in journals for later review.</li> </ol>	
<b>Explore</b>	
<p><b>PURPOSE:</b></p> <ul style="list-style-type: none"> <li>• SWBAT use thermometers to observe the indoor and outdoor temperature at different times of day</li> <li>• SWBAT record data in a graph to investigate temperature changes throughout the day</li> <li>• SWBAT record the weather and use data to inform hypothesizes</li> </ul>	
<b>Activities (list)</b>	<b>Driving Question</b>
TSW record weather and temperature for three days at different times of day	Will the time of day and weather affect the temperature inside and/or outside?
<p><b>Student Communication Product:</b> (written report, oral presentation, poster, etc.)                      (consider showing "Models" of student products to help student identify characteristics of quality)                      Weather and temperature chart                      Graphing of data                      Both will be kept in science journal</p>	
<b>Explain</b>	
<p><b>PURPOSE:</b></p> <ul style="list-style-type: none"> <li>• SWBAT use their data to determine the hottest and coolest part of the day</li> <li>• SWBAT share observable patterns about weather and temperature changes</li> </ul>	
<p><b>Content Media: (written material, video, teacher lecture, technology)</b></p> <p><a href="https://www.youtube.com/watch?v=6FB0rDsR_rc">https://www.youtube.com/watch?v=6FB0rDsR_rc</a></p>	
<p><b>Student Communication Product: (assessment, unit test, written report, oral presentation, poster, etc.)</b>                      Think, pair, share                      Graph representing temperature and weather used as evidence to explain student hypothesizes. Students will share what time of day they think will be the hottest and use their data to support their claim. TTW ask students to think about how our activities are influenced by the heat experienced at certain times of day: what is happening to the sun, why does it feel hotter, in what ways can we use this heat/energy?</p>	
<b>Elaborate</b>	

**PURPOSE:**

- TTW ask students to recall parts of the story “Waiting for the Biblioburro?” to answer the following questions: why do you think Ana collected eggs in the morning, how did Ana know what time of day it was, how can we use what we have observed about the sun to know when it is time to go to school and when it is time to go to bed, how did Ana know it had been a long time since the Biblioburro had been to the village (use text and illustrations as evidence)?
- SWBAT use information gathered from data to predict what will happen when the sun is used to cook food; TSW choose the optimal time to cook food using the sun based on data.

**Activities:**

TSW construct a solar oven they will use to make a s'more

**Content Media: (written material, video, teacher lecture, technology)**

Pizza box, marker, plastic sheeting, dowel rod, black construction paper

**Extending/Application Questions for Whole/Small Group Discourse:**

Using our data, what will be the best time of day to use the sun's energy to cook our s'more? What will happen to each of the components; marshmallow, chocolate, graham cracker?

**Student Communication Product (assessment):** (unit test, written report, oral presentation, poster, etc.)

TSW create a pictorial representation of the position of the sun and the condition of the s'more after the cooking process is complete. TSW include time, weather, and temperature outside.

**Evaluate**

**PURPOSE:** SWBAT identify the warmest part of the day and why.

<b>Skill/Reasoning Learning Objectives</b>	<b>Assessment Instrument</b>
SWBAT use data to identify hottest part of the day	Science Journal Entry: Graph with indicator of their prediction based on evidence; SWBAT circle data representing hottest part of day
<b>Knowledge Learning Objectives</b>	<b>Assessment Instrument</b>
SWBAT identify predictable patterns of the sun	<p>Science Journal Entry: Graph</p> <p>SWBAT communicate, verbally, the sun moves across the sky, the heat felt on Earth is hottest at a particular time of day, and we can use our observations about the movement of the sun and the energy felt to “tell time”.</p> <p>SWBAT create a drawing representing the effects of the sun’s energy and explain why they think they got the results; did the s’more cook?</p>

I believe the lesson above will be enhanced by adding an art project whereby students observations of the sun's position in the sky, during the time of day they are recording the temperature, will enhance this lesson. Students' would be creating a picture exploring lines and form with regard to background, foreground, and horizon. The creation of such an artwork would help students to track the sun in the daytime sky and better understand the concept the Earth revolves around the sun. Additionally, students conversations about the position of the sun in the sky might spark ideas about changes to temperature and seasons. The only downside I see at this point is there is opportunity for the create stage of visual arts but there is not a lot of opportunity, at present, to look into other stages of the visual arts process. It would be great to find other works of art to explore and discuss as examples of both the science concept of the sun's position in the sky, changes in temperature, and are good examples of the form they will be learning.